Space Weather Forecast

Issued on Wednesday, 07 August 2024 at 13:11 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate to High activity expected.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate with two Moderate flares observed, the largest from the region just west of centre disc. There are ten regions on the visible disc, the largest of which is in the southeast. This has been relatively inactive through this period, only producing common class flares, and has only seen limited development within the proliferation of small spots to its south and west. However this has now also moved into a location where a very mixed polarity spot is evident in a small penumbral area following the main leader spot. Across the south-centre disc two further regions showed ongoing growth in their small spots trailer spots, also including the development of very small mixed polarity regions.

Coronal Mass ejections (CMEs) were evident in imagery. These included one to the northwest, from the eruption of a line of plasma (a filament), in the northwest at around 07/0120 UTC, and a further CME off the southeast disc that had an unknown source location, but perhaps the flaring of the large spot. Another CME was observed from over the northeast limb. These are all likely to miss, however glancing influences are possible from the northwest CME on day 4 (10 Aug).

Solar Wind / Geomagnetic Activity: Slow wind conditions persisted through the period. Solar wind speeds eased from slightly elevated to background, from just over 400 km/s to just below. Interplanetary Magnetic Field was Weak while the north-south component was Weak and variable in direction. Geomagnetic activity remained Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was slightly above background, but soon eased back to background. No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to High solar activity is forecast to continue, with occasional Moderate-class flares expected and with a chance of isolated Strong-class flares.

Solar Wind /Geomagnetic Activity: There are no Earth-directed CMEs, although the CME which left the Sun on 07 Aug is expected to pass close later on day 4 (10 Aug), with glancing influence possible. Background slow winds are expected throughout with just a slight chance of connecting to any fast wind from a small coronal hole by the end of the period. Geomagnetic activity is forecast to be mainly Quiet with isolated Unsettled intervals, but a slight chance of Active to G1 Minor storms by the end of the period from any CME glance or coronal hole onset.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist around background levels, but with a chance of further enhancement given the occurrence of any notable flares. This gives a slight chance of reaching or exceeding the S1 Minor Radiation Storm level.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	5	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	80	80	80	80
Very Active	R3 to R5 X	No	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	20	20	20
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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